SYNOPSES OF ZODION AND MYOPA WITH NOTES ON OTHER CONOPIDÆ.

Nathan Banks.

For several years I have been accumulating material in this family, and the occasion of determining some western material induces me to publish descriptions of certain new species and to tabulate two of the genera, *Myopa* and *Zodion*, although the table of the latter genus is rather unsatisfactory.

These insects, like most parasitic ones, are variable in size; thus our two Eastern Occemyias cannot be separated by size as has been stated, each of them having large and small specimens. In the Myopinæ several species are widely spread, thus *Myopa vesiculosa* and *Zodion fulvifrons* occur in California as well as the East, and *Myopa pilosa* which was described from California is probably the same as our Eastern *M. vicaria;* also *Zodion pygmæum* from California and Nebraska seems to agree with our Eastern *Z. nanellum*, *Myopa clausa* I have from Utah, and *Zodion perlongum* and *Z. parvum* described from New Mexico and Arizona occur here in Virginia. *Z. obliquefasciatum* is also widely distributed, and *Occemyia loraria* occurs in Oregon as well as the East. In the Conopinæ, the species are more local, and the Western and Southwestern species are different from the Eastern ones; the Western species usually with more yellow upon them.

Conops arizonicus n. sp.

Face whitish, cheeks wholly pale, front and vertex dark rich brown, except that the white extends up as a narrow silvery stripe on inner orbits, and the dark extends down a little on the facial ridges. Antennæ dark brown, the third joint fully one and one-half times as long as the second; thorax and abdomen black, shining; last segment of abdomen more grayish pollinose and transversely wrinkled; hypopygium mostly shining black; legs blackish, extreme tips of the femora and basal half or third of tibiæ pale. Vertex, thorax, abdomen and legs with short blackish hair; wings with large costal dark cloud to end of second vein, extending directly downward to tip of the fifth vein; extreme tip dark. These marks are like those of *C. sylvosus*, except that here the cloud extends unbroken to the fifth vein and the abdomen does not show pale bands; halters pale. The ventral plate is not as large as in *C. sylvosus*.

Length, 7 mm.

From Palmerlee, Ariz., Aug. (Biederman). It is distinguished from *C. sylvosus* by the much longer third joint of antennæ, and the second joint not quite as long as in that species.

Conops brachyrhynchus var. **semifuscus** n. var.

Agrees with the type in structure and general coloration. The femora are almost wholly pale; the pale mark on tip of second and base of third abdominal segment is much longer, the last segment and basal part of hypopygium more yellow; the humeri yellow pollinose and the dark of wings stops at the third vein (in *C. brachyrhynchus* the dark gradually fades off.).

From Jemez Springs, N. Mex., 6 July (Woodgate).

Zodion.

In this genus are a number of closely related species; several of the Eastern forms are best separated by the shape of the ventral plate of the female. The forms intermediate in size I have placed twice in the following table, since they vary in size. *Z. fulvifrons* sometimes has the first posterior cell closed, so it also occurs twice in the table.

1. Thorax and abdomen gray, with very distinct black spots; legs pale, also with black spots ..... *pictulum*
   Thorax, abdomen and legs with only indistinct black spots or with lines or streaks 2
2. Thorax with two pale submedian stripes, abdomen largely pale, with oblique dark bands ..... *obliquefasciatum*
   Thorax without pale stripes 3
3. Palpi rather long, clavate ..... *palpalis*
   Palpi minute, cylindric 4
4. Very small species, hardly over four millimeters 5
   Larger species, nearly six or more millimeters in length 9
5. Last joint of antennæ wholly pale; first posterior cell closed 6
   Last joint of antennæ wholly pale; cell open; legs black, abdomen not marked with pale ..... *triste*
   Last joint of antennæ dark at tip 7
6. Cell petiolate; abdomen of ♂ mostly dark ..... *parvum*
   Cell closed in margin; abdomen of ♂ mostly pale ..... *abdominale*
7. Cell short petiolate; basal part of ♂ abdomen pale yellowish ..... *scapulare*
   Abdomen black with gray marks; cell open 8
8. Eastern specimens ..... *navellum*
   Western specimens (probably the same) ..... *pygmæum*
9. First posterior cell closed 10
   First posterior cell open 12
10. Abdomen of ♂ pale yellowish at base; last joint of antennæ dark at tip. *scapulare*
    Abdomen not paler at base; last joint of antennæ not dark at tip 11
11. Thorax gray with two or three dark stripes; abdomen not usually pale. *fulvifrons*
    Thorax not so plainly marked, abdomen of ♂ pale yellowish ..... *abdominale*

12. Thorax not plainly striped; western species.....13
Thorax more distinctly striped.....14
13. Legs mostly dark, abdomen wholly dark.....*triste*
Legs pale, last abdominal segments pale.....*obscurum*
14. Proboscis from palpi to tip fully twice the head height ; abdomen pale in male, Western species.....*reclusum*
Proboscis not so long.....15
15. Thorax gray, with two or three dark stripes above beside lateral spots; ventral plate broad and low.....*fulvifrons*
Thorax brownish, with four or five dark stripes, beside lateral spots; the intermediate stripes distinct only in front.....16
16. Ventral plate fully twice as long as broad, abdomen of female very slender and compressed; male with pale abdomen.....*perlongum*
Ventral plate shorter.....17
17. Ventral plate much broader than long; the striated dark area behind also broad.....*sayi*
Ventral plate as long as broad.....18
18. Ventral plate about one and a half times as long as broad, Eastern species. *intermedium*
Ventral plate about as long as broad, Western species.....*occidentale*

Zodion fulvifrons Say.

Say says that the thorax has two distant brown lines. This plainly agrees only with *Z. abitus* Adams; the first posterior cell varies from open to closed. I have therefore no hesitation in considering *Z. abitus* a synonym of the true *Z. fulvifrons*. *Z. rufifrons* Macq. was from Philadelphia. He says the thorax with "nuance de cendre argente" which will apply far better to *Z. fulvifrons* than to any other Eastern species. The rest of his description will fit any of our Eastern species. *Z. fulvifrons* has the ventral plate low, and much broader than long.

Zodion perlongum Coq.

Described from the West, it occurs here in Virginia. The long, compressed abdomen, and the very long ventral plate will distinguish the female. What I believe is the male has a rather pale abdomen. Mr. Greene has taken it at Broomall, Pa. Most of the specimens are taken in September.

Zodion intermedium n. sp.

Face whitish, antennæ reddish, front fulvous, in some specimens much darkened on the vertex and the dark reaching forward in a forked stripe; thorax above brown, with four black stripes, the intermediate pair only in front, the sublateral pair not extending forward, lateral spots, and transverse suture often black; metanotum dull black. Abdomen black, yellowish gray pollinose, especially on sides and a middle stripe; legs pale, femora dark above, last tarsal joint black; wings rather yellowish on base, veins beyond base dark. Vertex, thorax, abdomen and legs clothed with black hairs. Proboscis beyond palpi about one and one-half times as long as head-height. Ventral

plate of female about one and one-half times as long as broad, narrowed toward tip, behind at tip the dark striated area is very narrow. Posterior cell open.

Length 7.5 mm.

From Pocono Lake, Pa., and Clementon, N. J. May and July, all from Mr. C. W. Greene. Cotypes in his and author's collection.

Zodion sayi n. sp.

Very similar to *Z. intermedium*, but smaller. Face, front, antennæ, thorax, abdomen and legs colored and marked as in that species. The wings also the same, first posterior cell open. Pubescence and pollen as in that species. The proboscis is rather shorter, from palpi to tip about once and a fourth the eye-height. The ventral plate is very different from *Z. intermedium*, and similar to that of *Z. fulvifrons* (*abitus*) being low, much broader than high, and behind with a very broad, dark striated area.

Length, 6 mm.

From Falls Church, July and Sept., and Mt. Jefferson and Horse Lake, Oregon, July (Lovett). Males from Mt. Graybeard, N. Car., May, and La Quintina, Cal., probably belong here. I have named it in honor of him whose description of *Z. fulvifrons* was sufficiently accurate to enable me to describe this form.

Zodion occidentale n. sp.

Face whitish; front golden, darker on the vertex, with the dark spots on the middle toward the antennæ; occiput largely black; antennæ reddish, third joint as long as the second, arista black; thorax brownish gray, with the usual stripes distinct, except the median one, which is faint. Abdomen brownish gray, paler near tip, indistinct blackish spots near middle; legs yellowish, femora often blackish above; tarsi darker, last joint black. Wings gray hyaline, veins dark. Vertex thorax, abdomen and legs clothed with rather long, black hair. Cheeks more than one-half eye-height; proboscis rather short. Ventral plate a little longer than broad.

Length 7.5 to 9 mm.

From Montaville, Mary's River, and Corvallis, Oregon, May and July (Lovett). Cotypes in collections of Oregon Agricultural College and that of author.

Zodion obscurum n. sp.

Face whitish, front golden, a brown median stripe reaching forward from the ocelli; antennæ reddish, arista mostly pale, third joint fully as long as the second; occiput mostly black. Thorax black,

gray pollinose, not showing distinct stripes. Abdomen black, gray pruinose, last segment red, hypopygium reddish on basal part, black on apical part; legs yellowish, tarsi darker. Wings nearly hyaline, venation mostly black. Vertex, thorax, abdomen and legs clothed with black hair. Cheeks hardly one-third of eye-height; proboscis moderately long; first posterior cell open. Ventral plate very broad.

Length, 5.7 mm.

From Bear Valley, San Bernardino Co., 6700 feet, and Santa Monica, both Cal. (Clark). Type in collection of author.

Zodion reclusum n. sp.

Face pale yellowish white; front golden, vertex brown, limited transversely in front, antennæ reddish, arista black, third joint about as long as the second; thorax brownish gray, with the fine stripes brown, the submedian very short, the lateral indistinct. Abdomen yellowish gray, with brown marks near middle, leaving a pale median stripe, basal segment gray; legs yellowish, femora usually blackish above. Wings brownish, venation mostly black. Vertex, thorax, abdomen and legs clothed with black hair. Cheeks not one-third the eye-height.

Length 6.5 mm.

From Redlands, Cal., Nov. (Cole) and Corvallis, Oregon, (Bridwell). Cotypes in collections of Oregon Agricultural College and that of the author; both males.

Zodion lativentre Graenicher.

I do not know this species. A male of what I have called *Z. perlongum* was sent Dr. Graenicher for comparison, but he said his species was very different from it.

Zodion abdominale Say.

The size is given as smaller than *Z. fulvifrons* (*abitus*), and the abdomen pale like the femora. This agrees well with *Z. bicolor* Adams; moreover, Say's statement about the color of the veins fits this species particularly well. The thoracic marks also agree.

Zodion triste Bigot.

Bigot says little of marks on thorax, and I have identified as this species provisionally a form from the West, which is small, has dark legs, and almost unmarked thorax.

Myopa.

In the following table of the species in my collection I have depended largely upon color; the color of the hair is very important; but the amount of reddish on thorax and abdomen in certain species is doubtless variable.

1. Wings with distinct dark clouds over the cross-veins; abdomen black-haired. 2
   Wings without clouded cross-veins. . . . 4
2. Face with rather short hair; a cloud in first posterior cell, which is closed, small species. . . . *melanderi*
   Face with long white hairs, forming a fringe below; first posterior cell open. . 3
3. Face with several small black spots on each side, dark clouds in both first and second posterior cells. . . . *willistoni*
   Face at most with a reddish spot each side above, no clouds in posterior cells. *vicaria*
4. Thorax and abdomen with short appressed white hairs. . . . 5
   Thorax and abdomen with black hair. . . . 6
5. Abdomen mostly reddish; costal cell not much darkened, *vesiculosa var.varians*
   Abdomen mostly black; costal cell very plainly blackish. . . . *vesiculosa*
6. The hairs on thorax above are hardly one-half as long as the arista; abdomen also with very short hair. . . . 7
   The hairs on thorax above as long as the arista; abdomen also with long hair. . . . 9
7. Abdomen wholly red; hairs of body are extremely short. . . . *seminuda*
   Abdomen largely black. . . . 8
8. Abdomen reddish on sides and behind; fifth segment not divided by a median pollinose pale streak. . . . *plebeia*
   Abdomen not reddish; fifth segment with a median stripe of pale pollen. *virginica*
9. Abdomen mostly black. . . . *longipilis*
   Abdomen mostly red. . . . 10
10. Proboscis very long, the second joint as long as femur I, the last joint as long as the second. . . . *clausa*
    Proboscis with the second joint only about two-thirds as long as the front femur, the last joint a little shorter than second. . . . *rubida*

Myopa vesiculosa Say.

This species is readily known by the white hair of body; it occurs both East and West, specimens are before me from Washington State, and the *conjuncta* of Thompson from California may possibly be the same species.

Myopa vesiculosa var. **varians** n. var.

Structurally like the typical form, but rufous throughout, and the wings lack the dark cloud through the middle area. The antennæ are a trifle shorter, but this may not be constant.

From Lincoln, Neb. Sent me by Mr. P. R. Jones as his idea of *Myopa clausa*.

Myopa vicaria Walk.

The description of *M. pilosa* Will. fits this species very well, but I have not seen any Californian examples and it may be distinct.

Myopa willistoni n. n.

M. pictipennis Will. preoccupied by *M. pictipennis* Rob.-Desv. 1830.

This species is distinct from all our other forms, except *melanderi*, by the much thickened femora. The second joint of proboscis is fully two-thirds of the head-height, the third joint is about equal to the second. The hair on the face is not as long as in *vicaria*. The knob of the halters is dark, pale in our other species. I have seen specimens from Oregon and California.

Myopa melanderi n. sp.

Black, face white, with short white hair, front with the usual black V-mark, and spots at the base of the antennæ, latter dark. Head from in front about circular; cheeks scarcely higher than eyes; proboscis black, last joint shorter than second, the latter hardly two-thirds of head-height; second antennal joint scarcely if at all longer than the third. Thorax black, two short, white pollinose stripes in front part. Abdomen, black, posterior margin of segments narrowly white pollinose, rather broader on the sides, a narrow, median, white pollinose stripe over all segments, last segments with only a pair of small dark spots. Legs black, base and extreme tip of femora, base, middle and tip of tibia and the tarsi pale. Front, thorax, abdomen and legs with moderately long black hair. Wings gray, yellowish on base and near stigma; anterior and posterior cross-veins plainly broadened with blackish, and a distinct rounded cloud above the posterior cross-vein in the first posterior cell, latter closed before tip. All femora much thickened as in *M. willistoni*.

Length, 4.5 mm.

From Pullman, Wash., 6 May (Melander).

Myopa clausa Loew.

I have considered as this species a reddish form with extremely long proboscis; it occurs in the East, and I have two from Utah (Spalding), also one from Mt. Graybeard, N. Car.

Myopa longipilis n. sp.

Black, face yellowish white, with fairly long white hair; front brown, showing the usual V-mark; antennæ dark, second joint a little longer than the third; head from in front almost circular; in some specimens a faint dark cloud on each cheek; proboscis black, second joint about two-thirds of head height; third joint about equal to the second. Thorax rather reddish on sides and behind; abdomen reddish toward tip, or on the sides, some of the segments narrowly white pollinose on sides behind. Legs reddish, on the femora largely blackish, except base and tip, tarsi pale. Front, thorax, abdomen and legs with long black hairs, fully as long as in *M. vicaria*. Wings rather pale brownish yellow, without dark clouds.

Length, 9.5 mm.

From Pullman, Wash., April and May (Melander).

Myopa seminuda n. sp.

Face yellowish white, with short white hair, antennæ and front reddish, second joint of antennæ much longer than the third which is usually short; front with the usual brown marks; occiput with large black mark behind each eye, head from in front plainly higher than broad, cheeks fully eye-height; proboscis with second joint not two-thirds of head height, third about equal to second. Thorax red, with three broad black stripes, more or less broken, middle one with a median pale line; metanotum deep black; abdomen bright red, lateral margins of segments barely white pollinose behind. Legs red, tarsi yellowish. Front, thorax and abdomen with extremely short, erect black hairs. Wings brownish, base yellow, costal area also rather yellowish, first posterior cell open or closed.

Length, 9 mm.

From Corvallis, Ore., June, and near base of Mary's Peak, Ore., May (Lovett), Cotypes in Coll. author and Ore. Agric. Coll. The extremely short hair distinguishes the species.

Myopa virginica n. sp.

Black, head yellowish white, face with short white hair; antennæ reddish, second joint much longer than the third; front with dark V-mark extending back and down on the occiput, also in a V. Head from in front plainly higher than broad, cheeks equal eye-height; proboscis dark, last joint paler, and as long as the second, latter about one-half of head height. Thorax with humeri shining, sometimes faintly reddish on sides and behind; abdomen black, first and second segments with lateral white pollinose spots, third fourth and fifth with apical white pollinose margin, broader at the sides, sixth and seventh mostly white pollinose; fourth and fifth segments with a narrow median white pollinose stripe. Legs blackish or brownish, basal part of tibia and most of tarsi pale. Front, thorax, abdomen and legs with rather short, black hair. Wings brownish, base yellow, first posterior cell closed before the margin.

Length, 7 mm.

From Falls Church and Glencarlyn, Va., in June and early July. Also one from the Catskill Mountains, N. Y., June, and one from Black Mountain, Swannanoa Valley, N. C., May. Probably this is the form referred to by Williston in his remarks after the description of *P. vesiculosa* as one specimen from Virginia with black pile.

Myopa plebeia Will.

Described from Arizona, I have seen one from Washington State (Mann.) Although structurally similar to *M. virginica*, it is much larger, and with a very different habitus, however too few specimens are known to me to know if it varies. The *M. castanea* of Bigot is quite probably the same form.

Bigot's Species.

G. rubida.

Agrees with a form of *Myopa* common in the West which is close to *M. clausa*, but with a shorter proboscis. I have it from Oregon and Washington.

G. maculifrons.

This is probably *Myopa vesiculosa* which also occurs in the West. The only objection is that Bigot says the hair of thorax is brown (he does not say black).

G. castanea.

Is larger than his other species; the red abdomen, black above, would indicate that it is *plebeia* Will., which agrees also in other characters. Von Roeder's statement that it is *Myopa clausa* is based on the idea that the closed cell is a specific character.

Occemyia abbreviata Lw.

The abdomen of both male and female slightly clavate, whitish on the posterior sides of second segment; hair black; in the female the ventral plate is very broad, low, and dark colored. Hind femora are often pale on basal half, black on apical half. The pollinose marks of abdomen are whitish. The size varies, and three specimens are as small as the smallest *O. loraria.*

Occemyia loraria Lw.

In the male the abdomen is more elongate and cylindric than in *O. abbreviata;* the pollinose marks more yellowish, the hair also yellowish. In the female the ventral plate is narrow, and mostly pale colored. The size varies, and some specimens are as large as the largest *O. abbreviata.* From Oregon (Corvallis) I have seen specimens that I cannot distinguish from the Eastern ones.

Dalmannia pacifica n. sp.

Face pale; in the male a large elongate dark spot each side just outside of the facial ridges, in female wholly yellowish; vertex and front black; thorax shining black, the humeri and scutellum yellow. Abdomen mostly yellowish above and below; first segment black, with a pale band at base and apex broadly pale; segments two and three yellow, with four separated (or barely connected) black spots across base, the lateral spots reaching the side margins; fourth segment yellow, with a black spot on each side, in the female the fifth segment has a pair of black stripes, united behind, and the ovipositor black; venter with a middle black spot on first segment; legs yellow, tarsi black; front and

hind femora with some black, mostly above; wings brownish; halters yellow. In structure very close to *D. nigriceps* and *D. picta;* in the venation the second vein ends nearer to the first vein than in *D. picta;* in this respect similar to *D. nigriceps.*

Length, 7 mm.

From Corvallis, Oregon, 4, 6 June (Lovett). Cotypes in collection Ore. Agr. College and that of author. Differs at once from *D. picta* and *D. nigriceps* in the much greater extent of the yellow on the abdomen.

Our four species may be distinguished as follows:

1. Humeri dark;scutellum dark; small species.....*vitiosa*
   Humeri pale, scutellum more or less pale.....2
2. Second and third segments yellow with four basal black spots; scutellum yellow.....*pacifica*
   Second and third segments mostly black, with apical yellow margin, more or less indenting the black.....3
3. Scutellum yellow; Eastern species.....*nigriceps*
   Scutellum mostly dark; Western species.....*picta*

Local Species.

The following eighteen species have been taken in Northern Virginia at, or in the vicinity of, Falls Church. Of the eighteen, thirteen have been taken in June, two (*Myopa*) only before June, and three only later than June. Almost invariably they occur only on white blossoms; *Myopa* in early spring has been taken on red bud, but prefers amelanchier.

Physocephala tibialis Say. Fairly common, 14 June to 17 Sept.

Physocephala sagittata Say. Falls Church, 17 June to 8 July.

Conops brachyrhynchus Lw. Falls Church, 16 June to 6 July.

Conops xanthostomus Will. Falls Church, 5 July to 8 Sept.

Conops sylvosus Will. Falls Church, 9 May to 15 July.

Myopa vicaria Walk. Falls Church and Great Falls, 15 April to 27 May.

Myopa vesiculosa Say. Falls Church and Great Falls, 10 to 27 April.

Myopa virginica Bks. Falls Church, 15 June to 7 July.

Occemyia abbreviata Loew. Common, 22 May to 31 July.

Occemyia loraria Loew. Common, 14 June to 18 Sept.

Zodion fulvifrons Say. Common, 13 June to 24 Sept.

Zodion perlongum Coq. Falls Church, 6 to 21 Sept.

Zodion sayi Bks. Falls Church, 6 July to 27 Sept.

Zodion nanellum Loew. Two from Falls Church, Great Falls, 16 June, 7 Sept.

Zodion parvum Adams. Three from Glencarlyn, 24 June, 2 July.

Dalmannia nigriceps Loew. Great Falls, Glencarlyn, 5 and 7 June.

Dalmannia vitiosa Coq. Falls Church, Glencarlyn, 14 and 17 June.

Stylogaster neglectus Loew. Falls Church, Great Falls, Glencarlyn, 14 June to 27 July.